

LISTING OF CLAIMS

1. (original) An isolated variant MATER protein comprising an amino acid sequence
(a) having at least 90% sequence identity to SEQ ID NO: 2, SEQ ID NO: 4, or SEQ ID NO: 24, and comprising at least one variant amino acid in a recognized MATER protein domain;
or
(b) having at least 90% sequence identity to SEQ ID NO: 2, SEQ ID NO: 4, or SEQ ID NO: 24, and comprising at least one variant amino acid in a region outside of a recognized MATER protein domain; or
(c) having at least 90% sequence identity to SEQ ID NO: 2, SEQ ID NO: 4, or SEQ ID NO: 24, and comprising at least one variant amino acid in a recognized MATER protein domain and at least one variant amino acid outside of a recognized MATER protein domain.
2. (original) The isolated variant MATER protein of claim 1, wherein the sequence of the protein comprises at least one variant amino acid in a Leucine-rich repeat.
3. (original) The isolated variant MATER protein of claim 1, wherein the sequence of the protein comprises at least one variant amino acid in the PAAD-DAPIN domain.
4. (original) The isolated variant MATER protein of claim 1, wherein the sequence of the protein comprises at least one variant amino acid in the aldo_ket_red domain.
5. (original) The isolated variant MATER protein of claim 1, wherein the sequence of the protein comprises at least one variant amino acid in the ATP-/GTP-binding domain.
6. (original) The isolated variant MATER protein of claim 1, wherein the sequence of the protein comprises at least one variant amino acid outside of a recognized MATER protein domain.
7. (original) An isolated nucleic acid molecule encoding a protein according to claim 1.

8. (original) A recombinant nucleic acid molecule comprising a promoter sequence operably linked to nucleic acid molecule according to claim 7.

9. (original) A cell transformed with a recombinant nucleic acid molecule according to claim 8.

10. (original) A method of detecting in a subject a biological condition associated with an abnormal *MATER* nucleic acid, comprising reacting at least one *MATER* nucleic acid in a clinical sample from the subject with a reagent comprising a *MATER*-specific nucleic acid binding agent to form a *MATER*:agent complex, and detecting the complex.

11. (original) The method of claim 10, wherein the *MATER*-specific nucleic acid binding agent is a *MATER* oligonucleotide.

12. (original) The method of claim 11, wherein the *MATER* oligonucleotide comprises at least 10 contiguous nucleotides of a human *MATER* intron sequence.

13. (currently amended) The method of claim 11, wherein the *MATER* oligonucleotide comprises a sequence as shown in any one of SEQ ID NOs: 25 through ~~38~~ 53.

14. (original) The method of claim 10, further comprising quantifying the *MATER*:agent complex and comparing the quantity of the *MATER*:agent complex with the quantity of an equivalent *MATER*:agent complex formed in a reference sample.

15. (original) The method of claim 14, wherein the reference sample is a sample from a reference subject known to have the biological condition.

16. (original) The method of claim 14, wherein the reference sample is a sample from a reference subject known not to have the biological condition.

17. (original) The method of claim 10, wherein the clinical sample comprises a reproductive cell.

18. (original) The method of claim 10, wherein the method is used for detecting a predisposition to infertility or reduced fertility or for presymptomatic screening of an individual for infertility or reduced fertility.

19. (original) The method of claim 10, which is a method of evaluating a cause of female infertility.

20. (original) The method of claim 10, further comprising *in vitro* amplifying a *Mater* nucleic acid prior to detecting the abnormal *Mater* nucleic acid.

21. (original) The method of claim 10, wherein the *Mater* nucleic acid is *in vitro* amplified using at least one oligonucleotide primer derived from a MATER protein encoding sequence.

22. (original) The method of claim 10, wherein the oligonucleotide primer comprises a sequence comprising an intron-exon boundary of human MATER.

23. (currently amended) The method of claim 22, wherein the oligonucleotide primer comprises a sequence as shown in any one of SEQ ID NOs: 25 through 38 53.

24. (original) An oligonucleotide primer used in the method of claim 22.

25. (original) The method of claim 10, wherein the *MATER*:agent complex is detected by nucleotide hybridization.

26. (original) The method of claim 10, wherein the agent is a labeled nucleotide probe.

27. (currently amended) The method of claim 26, wherein the nucleotide probe comprises a sequence as shown in any one of SEQ ID NOs: 25 through 38 53.

28. (original) A labeled nucleotide probe used in the method of claim 26.

29. (original) A kit for detection of a genetic mutation in a sample of nucleic acid, comprising:

(a) a first container containing an oligonucleotide capable of specifically hybridizing with a *MATER* nucleic acid, which oligonucleotide has a sequence comprising at least 10 contiguous nucleotides from an human *MATER* intron; and

(b) a second container containing a fluorescent labeled nucleic acid probe that is fully complementary to the oligonucleotide.

30. (original) The kit of claim 29, wherein the fluorescent labeled nucleic acid probe has a length of between 5 and 500 nucleotides.

31. (currently amended) The kit of claim 29, wherein the oligonucleotide comprises a sequence as shown in any one of SEQ ID NOs: 25 through 38 53.